

Scale 1:1 500 000

0 20 40 60 80 100 km

GENERAL NOTES

This map sheet covers the entire surface of Mimas at a nominal scale of 1: 1 500 000. The source of map data was the Cassini imaging experiment (Porco et al., 2004)¹.

Cassini-Huygens is a joint NASA/ESA/ASI mission to explore the Saturnian system. The Cassini spacecraft is the first spacecraft studying the Saturnian system of rings and moons from orbit; it entered Saturnian orbit on July 1st, 2004.

The Cassini orbiter has 12 instruments. One of them is the Cassini Imaging Science Subsystem (ISS), consisting of two framing cameras. The narrow angle camera is a reflecting telescope with a focal length of 2000 mm and a field of view of 0.35 degrees. The wide angle camera is a refractor with a focal length of 2000 mm and a field of view of 3.5 degrees. Each camera is equipped with a large number of spectral filters which, taken together, span the electromagnetic spectrum from 0.2 to 1.1 micrometers. At the heart of each camera is a charged coupled device (CCD) detector consisting of a 1024 square array of pixels, each 12 microns on a side.

MAP SHEET DESIGNATION

Sm Mimas (Saturnian satellite)

1.5M Scale 1 : 1 500 000

SMN Semi-controlled Mosaic with Nomenclature

2008 Year of publication

IMAGE PROCESSING ²

Radiometric correction
Geometric correction
Photogrammetric adjustment using limb-fitting techniques
Map projection
Photometric correction using the Hapke bidirectional reflectance function
Processing of the mosaic

MAP PROJECTION

From -90° to -55° latitude
Stereographic projection centered at -90° latitude

From -57° to 57° latitude:

Mercator projection centered at 0° latitude, 0° West longitude

From 55° to 90° latitude: Stereographic projection centered at 90° latitude

Adopted figure: Sphere Mean Radius: 198.2 km³

Grid system: Planetographic latitude, West longitude

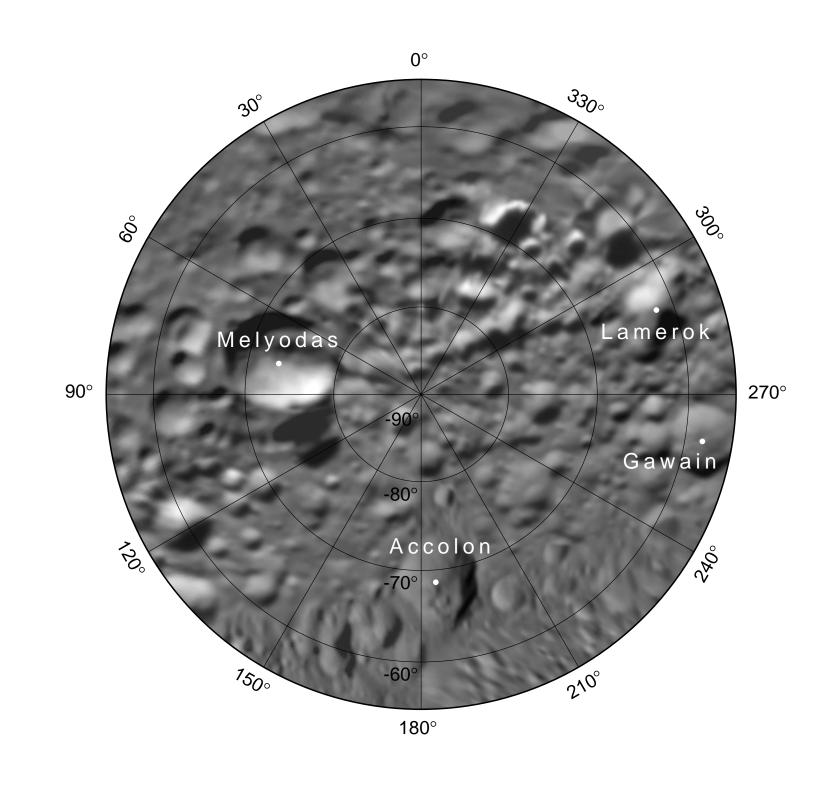
CONTROL

For the Cassini mission, spacecraft position and camera pointing data are available in the form of SPICE kernels. SPICE is a data system providing ancillary data such as spacecraft and target positions, target body size/shape/orientation, spacecraft-orientation, instrument pointing used for planning space science missions and recovering the full value of science instrument data returned from missions (http://naif.jpl.nasa.gov/). While the orbit information was sufficiently accurate to be used directly for mapping purposes, the pointing information was improved using limb-fit techniques. Newly derived tri-axial ellipsoid models were used to calculate the surface intersection points. A spherical reference surface is used for map projections.

The longitude system by Davies and Katayama (1983)⁴ and adopted by the IAU/IAG (International Astronomical Union/International Association of Geodesy) Working Group on Cartographic Coordinates and Rotational Elements as standard (Seidelmann et al., 2007)⁵ is defined by crater Palomides; this crater defines the 162° meridian. To be consistent with this definition, the final semi-controlled atlas was shifted by 4.0° to the east.

NOMENCLATURE

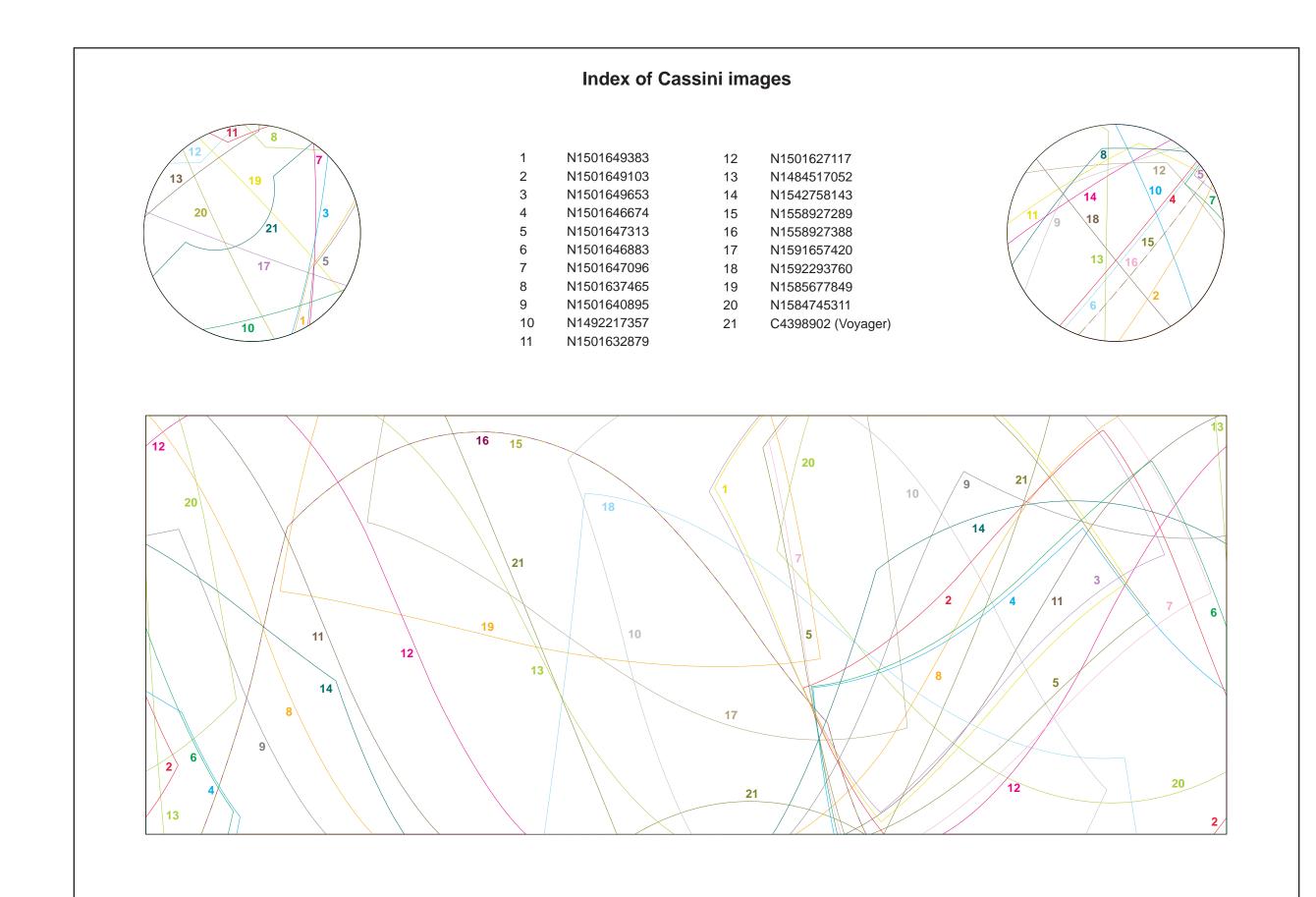
Names are suggested by the ISS-Camera-Team and approved by the International Astronomical Union (IAU). For a complete list of IAU-approved names on Mimas, see the Gazetteer of Planetary Nomenclature at http://planetarynames.wr.usgs.gov/.



South Polar Region

Scale 1:1 500 000

20 40 60 80 100 km



REFERENCES

¹ Porco, C.C., West, R.A., Squyres, S., McEwen, A., Thomas, P.C., Murray, C.D., DelGenio, J.A., Ingersoll, A.P., Johnson, T.V., Neukum, G., Veverka, J., Dones, L., Brahic, A., Burns, J.A., Haemmerle, V., Knowles, B., Dawson, D., Roatsch, Th., Beurle, K. and Owen, W., 2004, Cassini Imaging Science: Instrument Characteristics and Anticipated Scientific Investigations at Saturn, Space Science Review 115, 363-497.

² Roatsch, Th., Wählisch, M., Giese, B., Hoffmeister, A., Matz, K.-D., Scholten, F., Wagner, R., Neukum, G., Helfenstein and P., Porco, C.C., 2006, Mapping of the icy Saturian satellites: First results from Cassini-ISS, Planetary Space Sciences 54, 1137-1145.

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their Significance, Icarus 179, 573-584.

⁴ Davies, M.E. and Katayama, F.Y., 1983, The Control Networks of Mimas

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⁵ Seidelmann, P.K., Archinal, B.A., A'hearn, M.F., Conrad, A., Consolmagno, G.J., Hestroffer, D., Hilton, J.L., Krasinsky, G.A., Neumann, G., Oberst, J., Stooke, P., Tedesco, E.F., Tholen, D.J., Thomas, P.C. and Williams, I.P., 2007, Report of the IAU/IAG Working Group on cartographic coordinates and rotational elements: 2006, Celestial Mech Dyn Astr 98, 155-180.

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